Journal of the Society of Arts.

FRIDAY, APRIL 11, 1862.

THE NATIONAL MEMORIAL TO THE PRINCE CONSORT.

A preliminary meeting, with a view to the formation of a Committee to carry out the views expressed in the Report of the Council published in last week's *Journal*, was held yesterday at the house of the Society of Arts. Amongst those present were the Duke of St. Albans, the Marquis of Salisbury, K.G., the Duchess of Norfolk, the Countess of Derby, the Earl and Countess of Malmesbury, Lady Manners, Sir Thomas Phillips, the Chaplain-General, the Rev. Canon Lonsdale, Mr. M. H. Marsh, M.P., Mr. W. H. Bodkin, Mr. Henry Hoare, Mr. John Kelk, the Rev. Samuel Martin, &c.

The Marquis of SALISBURY having been called to the chair,

Mr. LE NEVE FOSTER read the above-named report of the Council, as well as letters from the Archbishop of Canterbury and the Bishop of Oxford, expressing their regret at not being able to attend, and their desire to do anything in their power to promote the objects of the meeting.

Lord HENRY LENNOX, M.P., moved the following resolution:—

That this meeting cordially agrees with the report of the Council, and heartily concurs in the proposal that arrangements be made to afford to every one who desires it, the opportunity of taking part in the intended National Memorial of affection and gratitude to the Prince Consort.

This was seconded by the Hon. ARTHUR KINNAIRD, M.P., and carried unanimously.

Mr. HENRY POWNALL, Chairman of the Middlesex Sessions, moved:—

That a General Committee be appointed, which shall represent all interests and all classes in the country, to give effect to the foregoing resolution by their collective and individual assistance in the formation of local sub-committees, and in the receipt of subscriptions.*

This was seconded by Mr. KELK, and carried unanimously.

The Rev. G. R. GLEIG (Chaplain-General) moved:—

That a Central Executive Committee be appointed, whose special duty it shall be to make known to each individual residing either in the parishes and hamlets of the United Kingdom, or in the colonies, the character of such Memorial as may be approved by her Majesty, and to obtain the subscriptions of all who desire to contribute to the fund; and that the Committee be instructed to appoint a chairman and a vice-chairman, as well as a treasurer, and that such Central Executive Committee have power to add names to the General Committee, and to their own body. The Central Executive Committee to consist of—

The Marquis of Salisbury, K.G.
The Earl of Derby, K.G.
The Earl of Malmesbury.
Sir Thomas Phillips.
Mr. M. H. Marsh, M.P.
Mr. Henry Cole, C.B.
Mr. Harry Chester.
The Honorary Secretaries.

This was seconded by the Rev. SAMUEL MARTIN, and carried unanimously.

To this Committee have subsequently been added—

The Duke of St. Albans.
The Hon. F. Byng.
The Hon. Colonel Talbot.

Mr. HENRY HOARE moved:—

That Mr. Le Neve Foster, Mr. Samuel Redgrave, and Mr. John M. Clabon, be the Honorary Secretaries.

This was seconded by the Rev. Canon LONSDALE and carried.

The Earl of MALMESBURY proposed the thanks of the Meeting to the Marquis of Salisbury, for his able conduct in the chair.

This was seconded by Mr. W. H. BODKIN, and carried by acclamation.

*As soon as this Committee is fully formed a list will appear in the *Journal*.

INTERNATIONAL EXHIBITION OF 1862.—SEASON TICKETS.

Members of the Society and others are informed that Season Tickets may be obtained at the Society's house, on application to Mr. S. T. Davenport, the financial officer. Price three guineas and five guineas, the latter also admitting to the Horticultural Gardens and *fetes* during the season.

INTERNATIONAL EXHIBITION OF 1862.—GUARANTEE.

The Council beg to announce that the Guarantee Deed is now lying at the Society's House for signature, and they will be much obliged if those gentlemen who have given in their names as Guarantors, as well as others interested in the Exhibition, will make it convenient to call there and attach their signatures to the Document. Signatures for sums amounting in the aggregate to £448,150, have been attached to the Deed.

EXAMINATIONS, 1862.

NOTICE TO LOCAL BOARDS.

The attention of Local Boards is particularly drawn to Par. 14 of the Examination Programme, as follows:—

14. The previous examinations must be held by the Local Boards sufficiently early in the year 1862 to allow

the results to be communicated to the Council, on a form which will be furnished on application, on or before the 23rd April, *i.e.*, four weeks before the commencement of the final examinations.

Any Local Boards expecting to have Candidates desiring to be examined in music, should apply to the Secretary of the Society of Arts without delay, who will furnish them with a copy of a form of test to be used at the Previous Examinations, as mentioned in paragraph 112 of the programme.

CONVERSAZIONI.

The Council have arranged for three conversazioni at the South Kensington Museum during the time of the International Exhibition; the dates fixed are Wednesday, the 7th May, the 9th July, and the 8th October.

Cards will shortly be issued to members of the Society, with the privilege of introducing a lady. Invitations will also be sent to Her Majesty's Commissioners, the Guarantors, the Foreign Commissioners, Jurors, the principal exhibitors, and others connected with the International Exhibition.

WEEKLY PROGRESS OF THE INTERNATIONAL EXHIBITION.

The raised platforms beneath the domes having been completed, workmen, during the last few days, have been busily employed in erecting a spacious amphitheatre in the eastern dome, which, on the 1st of May, is to accommodate the orchestra.

Here, also, a body of masons may be seen actively engaged in laying the foundation of Messrs. Minton's large fountain, whose clear waters will leap beneath its roof of glass to the height of 50 ft.

The decoration of the inside of the tympans, under the direction of Mr. Crace, is making rapid progress. Much light has been thrown on the method which this artist has employed in his treatment of the building, by the paper which he read on Wednesday evening, before the Society of Arts, and which will be found in the present number.

The great windows at the extremities of the northern transepts, have been retraced in Gothic forms, and filled in with stained glass, supplied by Messrs. Hardman and Co.; and while they suggest notions of ecclesiastical decoration, they furnish a pleasing variety in a building dedicated to the three sisters, Art, Science, and Industry.

The only part of the building which as yet is quite ready for the reception of visitors, is the English Picture Gallery, entrance to which is strictly forbidden. The task of hanging and grouping, a difficult one, has been performed by Mr. Redgrave, R.A., and Mr. Creswick, R.A., with pre-eminent skill, judgment, and taste. The principle on which they have proceeded preserves the chronology as far as possible, but throws the pictures into harmonious groups. The result is, that as you walk along the line of the gallery, at every 20 or 30 feet the spectator has an agreeable and picturesque arrangement of several works, in which the contrasts have been made so as to show each work to the best advantage.

Mr. Samuel Redgrave is still busily at work with the water-colour drawings, and has adopted similar principles to those already explained.

Some slight progress has been made during the week by foreign exhibitors of art, the Swiss and Norwegians displaying an energy which contrasts favourably with the continued apathy of their continental brethren.

The eastern annexe presents many features of interest. Exhibitors are adorning and altering its appearance daily by the erection of stalls and tasteful galleries, which are reached by spiral staircases. In the large open court which forms the heart of this annexe, greenhouses of various sizes, forms, and patents are springing rapidly into existence. These, it is hoped, as the season advances, will be filled with a choice collection of fruits and flowers.

Outside the building much of the bustle which distinguished the past week has subsided, except at the entrance of the machinery annexe, where engines and mechanical appliances still continue to arrive, It is a matter of regret that the manufacturers of locomotives to the Great Western Railway Company should not have sent for exhibition one of their magnificent engines, to illustrate the broad guage, as the narrow is worthily represented by a splendid locomotive belonging to the London and North-Western Railway Company.

Now that all the goods may be said to be brought under the roof of the building the scene in the interior is full of activity. Exhibitors are vying with one another in erecting their show stalls and counters. On the English side alone, however, have the objects intended to be submitted to the public criticism, been drawn from their hiding places and arranged in their cases. On the foreign side boxes, bales, and packages of every size and shape lie scattered around, and piled in irregular heaps, which, though to the eye they seem confusion itself, under good organization will require but little time to put in order.

Although the art designs for manufactures are vastly better than they were in the Exhibition of 1851, this is not a display which fairly represents the progress of design in this country since that period; for this there is a very obvious explanation. It is not that better designs do not abound, but for various trade and other reasons they are not to be procured. Manu-

facturers who have designers in their employment consider the designs their own property—they hesitate to show them—value them but little, and frequently destroy them during the process of manufacturing. The Art Design Committee have had great difficulty in obtaining suitable specimens for exhibition.

The Commissioners have invited the mayors of the chief towns in Great Britain and the delegates of foreign countries and of British colonies, to furnish flags emblazoned with designs, to be hung in the nave and transepts, with a view, not only of giving prominence to them as contributors to the exhibition, but also of lending additional ornament to the building. It is gratifying to know that this suggestion of Her Majesty's Commissioners has been warmly taken up, and communications have been received from many of those who were addressed on the subject, undertaking to furnish banners as desired.

Some questions have been raised as to the necessity of taking season tickets for the opening. Excepting Foreign Ministers, the Foreign Commissioners, and the Jurors, it is requisite that all persons who wish to be at the opening should be provided with season tickets. To mark the spirit of the Commissioners' rules on this subject, the Commissioners themselves and the heads of the staff, as in 1851, have purchased season tickets.

Another question has been asked, What is meant by "Gentlemen occupying official reserved seats?" These are seats reserved for persons invited to be present, as holding some office or representing some class of the community, and those only who appear in Uniform or any kind of Official dress will occupy front places; others, in private dress, will have reserved seats at the back. Ladies, of course, will be in morning dress.

SEVENTEENTH ORDINARY MEETING.

Wednesday, April 9th, 1862.

The Seventeenth Ordinary Meeting of the One Hundred and Eighth Session was held on Wednesday, the 9th inst., the Right Hon. Lord Taunton in the chair.

The following candidates were proposed for election as members of the Society:—

Amory, John Heathcoat..	Tiverton
Amies, Nathaniel John...	Manchester.
Dutton, Thomas Robert .	Goldhawk-road, Hammersmith, W.
Elliot, William Henry Fletcher	22, Austin Friars, E.C.
Newcombe, S. Prout	Rose-hill, Dorking.
Noble, William	8, Onslow-pl., Brompton, S.W.
Priestley, Frederick	15, Berners-st., Oxford-st., W.
Storey, Thomas	Lancaster.
Walton, Frederick.....	British Grove Works, Chiswick, W.

The following candidates were balloted for and duly elected members of the Society:—

Baiss, James	102, Leadenhall-street, E.C., & The Firs, Brenchley, Kent.
Cheetham, John.....	Staley-bridge, Lancashire.
Child, William Henry ...	21, Providence-row, Finsbury, E.C.
Clayton, Richard Clayton Brown	22, Norfolk-crescent, W., and Athenæum Club, S.W., and Adlington-hall, Chorley, Lancashire.
Edwardes, Grant	Ledbury-road, W.
Reed, Thomas	Downham Market, Norfolk
Ross, Augustus	Glycena-lodge, Lavender-hill, S.W.
Seymour, Hugh H.....	30, Upper Brook-street, W.
Unwin, George	31, Bucklersbury, E.C.

And as Honorary Corresponding Member.

Fournier, Charles	Bureau du Ministre de la Guerre, Paris.

Previously to the reading of the paper, the Secretary called attention to some specimens of telegraph cable, covered with cane, of which a description will be found at page 345.

The paper read was—

ON THE DECORATION OF THE INTERNATIONAL EXHIBITION BUILDING.

By J. Gregory Crace.

The building for the International Exhibition, now so shortly to be opened, has been lucidly explained by Captain Phillpotts, in the paper read before you in December last; therefore, it will be unnecessary for me to take up much of your time by a description of the various parts of it, and I will only briefly recall to your minds the main features and arrangement of the building, in order that you may the more easily understand me when I refer to them in my description of the decoration. This arrangement of the building will be easily understood by referring to the ground plan. The principal front faces the Cromwell-road, and has a south aspect; it extends nearly 1,200 feet. On the first floor of this front range the series of Picture Galleries. Parallel with this front is the nave, 800 feet long, and terminating at each end in the great domes, each 160 feet in diameter. From these extend again, north and south, the transepts, having each a length of 200 feet on either side of the domes. The nave and transepts may be represented by the letter

the extreme length being 1,200 feet, and the width at the ends 560 feet. The height to the pitch of roof in nave and transept is 100 feet, and the width between the columns 85 feet. The great domes have a diameter of 160 feet, and rise to an interior height of 200 feet. Galleries 50 feet wide extend on both sides of the nave and inner sides of transepts. Other galleries, 25 feet wide, are carried round the outer sides of transepts and sides of walls of picture galleries, and one 12 feet wide against walls of refreshment rooms.

Parallel with the nave, and on either side of it, are the glass courts; those on the south side being 200 feet wide, those on the north 87 feet.

On the north side of this area is a large range of building, forming the refreshment rooms; through these, under a triple archway, nearly opposite the main entrance from the Cromwell-road, is an entrance to the Horticultural Gardens, of which a most pleasing view is here seen. This completes the description of the main area of the building; but at both extremities extend two very important additions, namely, the eastern and western annexes, the latter nearly 1,000 feet long, and the former 775 feet.

Having refreshed your memory as to the form, size,

and arrangement of the building, I will now speak of the decoration of it.

We will enter by the great archway in the centre of the south front, and passing by the staircase which leads to the picture galleries, and to which we will return by-and-bye, we proceed to the nave. I confess that when I first saw this interior my heart quailed; its general aspect was not encouraging; the day was damp and bleakly cold; the rough polygonal arched principals and diagonal boarded ceiling looked heavy and difficult to manage; the light from the clerestory windows fell in faint streams on the muddy road, that was then the traffic way in the interior; masses of dark scaffolding, obstructing the light from where the domes were then being erected, and the various trials of colouring which had been already made, one at least of them by an able man, showed me that it would require very careful consideration indeed before I should decide upon what style of decoration to adopt. Do not let me be unjust nor let my own apprehensions as to a successful treatment of the decorations lead you to suppose that I mean to reflect on the building itself. When I came quietly to consider all the features of the construction, I found that those apparently heavy principals only required to be properly treated in colour to be sufficiently light, that they were also of most ingenious construction; that the proportion was pleasing; and that the light of the clerestory windows was amply sufficient. I fear that many may have seen the building under the same adverse circumstances that first presented it to my view, and have passed criticisms not so just as the merits of the undoubtedly talented contriver of the building should deserve. Pardon me if I have wandered for a moment from the subject of my paper, more especially as I earnestly hope, that in any discussion that may follow, it will be borne in mind that it is only the decoration of the building which is now before us.

Well, we are in the nave. How to decorate it? I had not too much time to think, the work must be done; it was January the 23rd when I received the authority from the Royal Commissioners to assume the decoration of the building with the entire responsibility of the results, and the work was to be completed by March.

After careful consideration I decided that the general tone of the roof must be light, and that the best colour would be a warm pale grey; that the arched principals must be made to stand out clear from the roof; that they must look well in a perspective of 800 feet; and that they must not look heavy or confused as they approached each other in the distance. No single colour would do, and after a pretty stiff bit of reflection of twenty-four hours, I confirmed myself in my opinion of what would be the most likely way of treating the principals.

I have remarked that the form of these is polygonal, and is best explained by the scale-drawing marked (A). They are in three thicknesses, the centres of the outer planks covering the joints of the inner ones.

I considered that the form precluded the use of a continuous repeat ornament, I therefore decided on following the form of the construction, and adopted panelings of blue and red alternately, relieved by coloured lines, intersected at the joints by circles of black, on which are gold stars, and from these spring ornaments in vellum colour with green in the filling, as shown in the coloured drawing.

Following out this arrangement I had a pattern painted on paper of the full size of one of the principals, and it was fixed in its place within a week from the time of my appointment; part of that identical pattern is now in this room; it has never been altered, and thus exactly it has been carried out throughout the roofs of the nave and transepts.

Until the principals were coloured, it seemed to me that the thicknesses were lost; I wished to make the construction evident, and I therefore coloured the two outer edges in chequers of black and vellum colour, and the centre edge full red. As to the bracings above the polygonal arches I coloured them the warm-wood colour, with red or blue coloured lines on the face, and the under thicknesses red.

I have said that I decided on warm grey for the roof of nave. I did so because it gave space and lightnesss; and on its surface I introduced an upright scroll ornament in red, with gold, star-like rosettes, sparingly introduced. My object in this ornament was to raise the apparent pitch of the roof, and to relieve and warm the effect of the grey. The horizontal purlines, on the contrary, I kept purposely light, so as not to depress the rise of the roof, or interfere with, or confuse the effect of the principals. The ridge piece of the roof, in itself comparatively small, I marked as strongly as possible, as the apex, in black and vellum white, *en chevronné;* on each side I coloured a margin of maroon red, and a little below that a bordering of very warm green, shaped to accord with the top scrolls of the red vertical ornament, the green being relieved with rosettes of gold colour. At the base of the slope of roof this green is again introduced in much the same way, and the band of maroon also. Below this are the clerestory windows.

The next important features in the nave are the iron columns, supporting the principals as well as the galleries. These I have painted pale bronze colour, relieved with gold colour vertical lines. The capitals are gilt; the grounds of the ornaments being picked in rich red or blue alternately; the centre blocks of the columns are also coloured red, with bands of blue, or, *vice versa*, the mouldings being gilt, and the same style of colour is continued to the bases. The top plate above the columns is painted bronze colour, relieved with light gold colour ornament on the upper part, and a vitruvian scroll in gold colour, with a maroon red base on the lower part.

The gallery railings are light bronze colour, the rose, shamrock, and thistle ornaments being partly gilt, and the whole backed with deep red cloth. The plate under the gallery is painted oak colour, relieved with deep brown interlaced ornaments.

I have kept the part below the line of arches purposely quiet in colour, in order that the brilliancy and richness of the various articles exhibited may not be interfered with. The roof, on the contrary, is rather vivid in colour, to carry up, as it were, in some degree, the gaiety of the scene below; and this will be still further sustained by a series of banners of the various countries whose products are assembled in this International Exhibition.

Much variety of opinion has been expressed at my introduction of the vivid colours in the arched principals of the nave; but I think that many who fancied it would look too powerful, will confess their surprise at its comparatively quiet effect now that it is completed. The colours being properly balanced have neutralized each other. Most of you probably know that blue, red, and yellow, in the proportion of three, two, and one, when mixed with white, produce a grey, exactly the same as the grey produced by mixing black and white. I will show you. I take ultramarine blue three parts, vermilion two parts, and chrome yellow one part. I mix them together, add some white—you observe it is grey. I take some black and white, mix them, and identically the same grey is produced. If you paint on a disc radiated stripes of blue, red, and yellow, in proper proportions, and make the disc revolve rapidly, you find grey produced, the same as if they were stripes of black and white. The effect of the roof of the nave exemplifies this theory.

I have heard it said by some that it would have been better to have employed panelings of one colour instead of two to each principal, and made the principals alternately blue and red; in my opinion they would have been utterly disappointed; the striped contrasts would have by no means given the softness, richness, and glow of the present colouring. To convince myself I, at one stage of

the colouring, tried, by fixing blue paper over the red panellings in one principal, and red paper over the blue panellings of another, but the effect was not nearly as good, and I was confirmed that the principle I had adopted was the right one.

You will find this principle of counterchanging colours adopted in most of the decorations of the early masters, which abound in Italy. Those decorations, so beautiful, so interesting, rich, glowing in colour, full of fancy and taste in the ornament, the masses well arranged, show the most perfect harmony everywhere, and are dignified by often acting as the framework of the highest gems of art. My son, who has been lately studying from these works in Italy, has made a series of sketches from some of them, which I thought might illustrate the observations I am addressing to you, and prove not uninteresting to those who are fond of decorative art.

You will find in the roof of the Upper Church of Assisi, in the Chapel of St. Corporale, of Orvieto, in the choir of Santa Croce at Florence, and in the Palazzo Spinola, examples of counterchanging of colouring, and in the roof of the Cathedral of Lucca the chevroneze of black and gold. In fact, the works of the Italian decorators of the fifteenth century afford most valuable lessons in ornamentation and colouring. But I must not be led astray from my more immediate subject. Having described the nave, I will now proceed to the domes which rise at either end of it, and form a point of intersection with that and the transepts. They are undoubtedly the main features of the building.

In plan their form is dodecagonal, or twelve sided, but they are made to assume the appearance of an octagon, because the arches towards the nave and transept cross each other, and form a kind of angular-arched opening of 85 feet span, the intermediate arches being about 35 feet span. From the floor of the nave to the springing of the domes is 114 feet, the total interior height to the crown of the domes being about 200 feet. There are 12 main ribs to each dome, meeting in a sort of ring plate, and thence eight of them carry on to the centre. The crown of each dome has an ornamental zinc covering, as explained in the drawing; all below this is glass.

My principal difficulty in carrying out the decoration of the domes was, that I could see nothing of them. The scaffold formed a series of solid stages or floors, through which it was impossible to view anything; and I confess I never could mount the ladders above 100 feet; but even there the scaffolding was so thick that I could see nothing of the top, and very little of the cornice, facia, and walls.

At last Mr. Ashton, the engineer, contrived to get for me an open square box into which I got, and I was drawn up by means of his beautiful little engine very pleasantly to the top; yet when I got there the ceiling almost touched my head, so that I had no opportunity of judging beforehand of the effect of distance and light upon my colouring, and I knew well that they were very formidable elements for consideration. The knowledge that the scaffold would be taken down before I could possibly judge of the effect, and that when once down I could never hope to touch my decoration again, caused me many an anxious thought.

My drawings will best explain to you the colouring I adopted for the top of the domes. The main ribs are painted bright red, with spaced black and white at the edges, and a fine gold line up the centre spreads at intervals of about four feet into lozenges and circles containing gilt stars on a blue ground; where the main ribs reach the ring plate I carry round the red, marking the points of intersection with black and white; thence the eight main ribs are painted deep blue, relieved with red, gold, and black, until they meet in the centre pipe or pendant, which is gilt bordered with red. The shaped covering, or umbrella, as I am accustomed to call it, is painted light blue; gold colour and gilt rays diverging from the centre and streaming a considerable way down the blue, the shaped outline of which is bordered with red and gold ornament.

In decorating the walls of the domes, the solid parts between the arches, and the springing of the roof, it was necessary to consider the probable effect of the great mass of light above. On the one hand it was desirable to sustain it with sufficient strength of colour, on the other it would be dangerous to make it too heavy.

The moulding of the cornice and facia are painted vellum colour, very slighly relieved by gilding; the trusses are gold colour; the facia between them is red, with a vellum patera; the soffit is green. The broad facia below is painted blue, and on it is inscribed in gold letters, three feet high, the exordium of David, in the 29th chapter of the first Book of Chronicles, "Thine, O Lord, is the greatness, and the glory, and the victory, and the majesty: for all that is in the heaven and the earth is thine;" and "O Lord, both riches and honour come of thee, and thou reignest over all; and in thine hand is power and might, and in thine hand it is to make great."

The large iron columns, which rise nearly 100 feet high, are painted dark maroon colour, their capitals being richly gilt. The paneling between the arches and the freize is painted in shades of red, relieved by coloured lines; in the four broad compartments are inscribed, on dark green panels, Europe, Asia, Africa, and America; below, on a circle, are the initials of those, so beloved by us all, Victoria and Albert. On the eight spandrils to the four main arches, are medalions, eight feet diameter, by Mr. Burchett, of the Kensington School of Art, emblematic of Manufactures, Commerce, and the various arts and sciences which lend their aid. These were executed in an exceedingly short time and, like all the rest of the work, with no opportunity of judging how they would look in their elevated situation. I should add that round the red paneling is a broad margin of sage green, on which are stencilled pateras. The moulding of the arches is painted vellum colour, the top fillet being gilt; and the face of them ornamented with vitruvian scroll in dark colour.

The walls at the gable end of the nave and transept are treated so as to recall the arched form of the principals. Under these a semi-circular panel is formed of warm brown colour, bordered by a broad blue margin, on which are gold stars. Inside the panels are written the following sentences:—

On the east end of nave—
"The wise and their works are in the hand of God." Ecclesiastes, chap. ix, v. 1.

On the east end of transept—
"Alternately the Nations learn and teach."—*Cowper.*

On the south-east end of transept—
"Each climate needs what other climes produce."—*Cowper.*

On the west end of the building the sentences are in Latin, being the part occupied by foreign exhibitors. At the end of nave is written—
"Gloria in excelsis Deo et in terra pax."

At the north-west end of transept—
"Domini est terra et plenitudo ejus."

At the south-west end of transept—
"Deus in terram respexit et implevit illam bonis suis."

Inside these semi-circular panels are a series of radiating panels, painted maroon, and bearing the names of the various sciences and arts which have affinity with the objects exhibited. The coloured drawing will more directly explain what I have thus endeavoured to describe.

I have mentioned that on either side of the nave extend the series of courts roofed with glass. These admit of very limited decoration, and the colouring I considered should be of a subdued and retiring character. The objects exhibited are to be the show.

The brick walls which form the boundary on one

side not being dry, it was necessary to have a colour which would not be materially affected by that circumstance. I adopted a quiet maroon colour, made with venetian red and purple brown. The columns are painted pale bronze, relieved by gold colour. The skylight frames are painted cream white, relieved by lines of red and blue alternately. Under the galleries the ceilings are painted very light grey, the joists cream white, the bottom edges lined blue, and the girders lined maroon red.

Let me here offer a few words of advice to the exhibitors of manufactured goods in silks, woollens, and cottons.

The effect of many rich and valuable stuffs was seriously impaired at the Exhibition of 1851, by injudicious arrangement of them. Brocaded silks of gay colours, or printed woollens or cottons, are best exhibited if somewhat shaded from the light; it would be well, too, if they were contrasted with deep tones of velvet or other plain material.

In the arrangement of plain fabrics, such as cloths, merinos, or velvets, much will depend on the way the colours are brought together. Avoid blazing contrasts of colour, such as bright red next bright green; or bright blue next bright yellow; such contrasts are not harmonious—let one of the two colours always be subservient to the other. It is not so much what colour a material is, but how that colour is made to appear. It is necessary to bear in mind that all colours have their complementaries, which add to or detract from the beauty of the adjoining colours, according to what they may be. Thus, the complementaries of red are green; of blue are orange; of yellow are violet. If you cut out pieces of grey paper in an ornamental form, and stick a piece on each of the three colours I have named, you will find, in a shaded light, the grey will be fully tinted by the complementaries of these colours. But you cannot lay down precise rules. An experienced artist can bring any two colours together by properly modulating them.

Nothing is so charming and so refreshing to the eye as an harmonious arrangement of colours; they are "like a sweet chord of music to the sense." The hand of nature never errs, whether it brings together scarlet and crimson, as in the cactus; scarlet and purple, as in the fuschia; yellow and orange, as in the calceolaria; or the colours in the varied plumage of exotic birds—the harmony is always beautiful, ever perfect. The laws of harmonious colouring are a necessary part of the knowledge of the manufacturers of coloured fabrics.

I will suggest a few contrasts.

1 Black and warm brown.
2 Violet and pale green.
3 Violet and light rose colour.
4 Deep blue and golden brown.
5 Chocolate and bright blue.
6 Deep red and grey.
7 Maroon and warm green.
8 Deep blue and pink.
9 Chocolate and pea green.
10 Maroon and deep blue.
11 Claret and buff.
12 Black and warm green.

Resuming our immediate subject, we will now return to the principal staircase, which we passed on our entrance from the Cromwell-road. The walls of the lower part of this staircase will be painted maroon red, as a background for the statues, bas reliefs, and other art works which will be placed here. The upper part of the wall, or, rather, space above the wall, will be enclosed by the various specimens of stained glass. Arrived at the landing, we enter the centre vestibule, from which we first gain the view of the magnificent range of picture galleries, extending 500 feet on each side. This vestibule will itself be filled with sculpture. The walls are coloured subdued red up to the string course, above that they are sage green.

The picture galleries on the east side contain the collection of the British, those on the west side the foreign schools; in size and arrangement they are exactly the same. The width of the galleries is 50 feet; the wall is 31 feet high, up to the cornice, from which springs a deep cove supporting the centre light.

Many of the pictures to be exhibited having been painted many years, it was essential to have a very low tone of colour for the walls; I adopted a sage green. When the colouring was partly done, and there remained some of the white wall still uncoloured, it was thought by many that the tone would be far too dark, and I mention this to show how difficult it is to judge of effects of colour till all the parts are complete. I never at present hear any fears expressed of the too great depth of colour. The cornice is painted vellum colour with maroon in the hollow, the ground of the cove is tinted of the same hue as the walls, but much lighter. I have divided it into two compartments by upright margins in vellum colour, on which is stencilled ornament on a deep ground; the compartments of green have marginal lines of maroon. The soffit is also vellum colour relieved by stencil ornament in maroon, and the upper cornice is cream colour.

The end walls of the principal galleries are slightly decorated; on either side of the arched entrance it is intended to place statues, and therefore it was necessary to have a maroon-red panel background; this is carried up to the springing of the arch, and thence broken into five concentric panels; above these are painted ornaments supporting medallions, in which are inscribed the names of painters.

To show with what energy it was necessary to carry out the works, I will mention that the whole of the picture galleries on the east side were painted and decorated in five days. I was asked on Saturday if my designs were ready—I decided the colours on Monday morning, the work was commenced at mid-day, and completed mid-day the following Saturday.

At the end of the principal galleries we enter the auxiliary galleries, which have a length of nearly 250 feet on each side of the domes; in these will be arranged the collection of water-colour drawings, architectural designs, &c.; here I have adopted a lighter tone of the same colouring, as in the larger galleries.

Crossing over to the north side of the building we enter by the triple archway, which I have before mentioned, the immense range of apartments devoted to refreshments; unfortunately, the state of the walls is such, that it will not be possible for the present to decorate them, except indeed the three large rooms on the upper floor, where the ceilings are of wooden construction; but I must needs confess that nothing I could do on the walls would compete with the charming view to be seen from the windows which run the entire length of these rooms. The whole of the New Horticultural Gardens is seen with beautiful effect; all their ornamental parterres, fountains, and walks, bounded by the handsome colonnades and conservatory, being seen in greater perfection than from any part of the Gardens themselves.

Having thus described to you, very imperfectly I confess, the decoration we have done, let me explain to you, briefly, how we did it. It was indispensable, in all the designs for the decorations, that they should be so arranged as to be easy of execution; that the important principle of "the greatest effect at the least cost," should be strictly attended to. Therefore, all ornament had to be done by stenciling, and all the colouring on woodwork was to be done in distemper. What the stencilling is I will explain presently. Distemper is a very ready means of colouring surfaces, because one coat of it bears out and gives a result more solid and more luminous than four coats of oil paint, but it has the disadvantage of not being preservative like the last, and it cannot be washed. Perhaps no one will ever discover the very rough state of the principals of the roof of nave, which are simply saw-cut, besides being blemished by the process of carting and lift-

ing them. The coat of distemper conceals all that. It is composed of whiting and size, made of any tint required by adding the usual colours.

Stencilling is performed by cutting out the pattern required in stout strong paper, which is then varnished over to strengthen and preserve it; taking care also to leave proper ties to keep the pattern together. But as example is better than precept, I have brought here a few of the stencils made use of for the decorations, and will show you how the work is done. I think that in the progress of the work more than 100 men must have been employed at this stencilling, out of whom, I have reason to believe, scarcely half-a-dozen ever did it before, and yet the work has been very well executed, and reflects much credit upon all those engaged upon it. I am happy to acknowledge the intelligence and perseverance of Mr. Huish, the foreman painter of Messrs. Kelk and Lucas, in directing these men. Also they will join with me, I am sure, in confessing how much they and I are indebted to the able assistance of my artist, Mr. Haclin; nor can I be silent on the constant aid I have received from my eldest son, whose sketches on these walls will sufficiently speak for him. The task I undertook was attended with difficulties of what I may call a diplomatic kind. The contractors were at the expense of carrying out the work I directed, and were naturally not desirous to be wasteful; the Royal Commissioners wished the work to look as well as possible, therefore, it is easy to be imagined that where one side used the whip the other pulled the reins; nevertheless, I feel bound to state that the contractors desired to have the decorations of the building well carried out, and that they have been actuated by liberal and unselfish feelings.

I have little more to say, but there is one word of thanks I cannot but give expression to on this occasion; it is to acknowledge with gratitude the encouraging support I have derived from the criticisms on my work which have appeared occasionally in the *Times* newspaper.

In a few days the International Exhibition will be opened—the collected Industry, Science, and Art of the whole world, thus brought together, will be opened to your view. I trust that they will in no way be injured by what I have done.

DISCUSSION.

Mr. G. Wallis was sure they must all feel indebted to Mr. Crace for the very able paper he had read, explanatory of the principles he had followed in the decoration of the building for the International Exhibition. To himself, personally, as the superintendent of the textile division, he might say it was a matter of more than ordinary interest, and he had on several occasions in the course of his duties called the attention of the exhibitors in his division to the principles of decoration which Mr. Crace had endeavoured to follow out, as an example worthy of being imitated by them in the decorations of their fittings, viz., that those decorations should be carried out with a view to the proper display of the articles exhibited, rather than with an eye to the ornamentation of the fittings themselves. At present, he was sorry to say, things looked as though the exhibitors contemplated carrying on an extensive business as a half-mourning establishment, and he thought they would do much better if they had a little more colour here and there, though there were instances where a little less brilliant colouring at those points where there would be plenty of colour afforded by the articles themselves was desirable. In these respects he had endeavoured to urge upon the exhibitors the principle laid down by Mr. Crace. In fact, he might say the principle had been followed out which ought to be regarded in all designs, viz., the purpose for which the design was intended; and Mr. Crace, in the discharge of the duty cast upon him, asked himself, What are the purposes to which the building is to be devoted? Is it an exhibition of the building itself or of the articles within it? He had regarded it as the casket which was to contain the objects of attraction, and that principle had been thoroughly carried out. He (Mr. Wallis) remembered the sensation he experienced when he saw the style adopted in the decoration of the Exhibition building of 1851. His feeling at the time was—although he confessed that the ultimate result was more satisfactory than he anticipated—that the building was decorated for itself rather than for the articles that were to be exhibited within it. Mr. Crace, in the present instance, had followed a different principle. As had been explained in the paper, he had kept the portion of the building in which the articles were to be exhibited of a quiet and low tone of colour, using brighter tints as he went upwards, to balance the brilliant effects of the articles to be exhibited below, so as to harmonise the general effect when the building was filled with its contents. No person could judge of the true effect of the decorations at the present time, when the view was obstructed by scaffold-poles and other rough objects; but he looked forward, as no doubt all present did, with great interest to the opening of the Exhibition, when would be seen the result of a system of decoration, with a view to the proper display of the contents of the building rather than of the building itself.

Mr. Philip Palmer wished to ask Mr. Crace whether his attention had been directed to the opportunity which seemed to be afforded him, of decorating the long range of the clerestory windows of the building. He thought if some attention had been paid to that point, the effect would have been richer than it was. They expected to see, not only from artists of this country, but from those abroad, some splendid works in the way of painted and stained glass, and therefore it had been a question with him whether a greatly improved effect might not have been produced by some relief having been given to the plain glass along the immense range of the clerestory windows, so as to enhance the architectural features of the building. He believed that Mr. Crace had given much attention to the art of colouring and painting on glass, and therefore he rather regretted that something of the kind had not been introduced in connection with the clerestory windows, which, in their present state, he thought were scarcely befitting a palace of art. He felt them to be the greatest eyesore of the building. It was not too late to remedy that defect, as in three weeks, under Mr. Crace's superintendence, those windows might be greatly improved—not by distemper or stencilling—but by the introduction of blue, amber, or other coloured glass, as might be required.

Mr. Beresford Hope, M.P., suggested that the remarks just made opened another question with regard to the continuity of the windows, namely, whether it would not be better to deal with them not as an entire mass, but to divide them by stripes of cloth or boarding, so as to make them real clerestory windows, and not an unbroken range of windows; and this opened out an objection to a portion of Mr. Crace's colouring on which he (Mr. Hope) had not been able to satisfy himself. That was the alternations of blue and red on the parts of the principals nearest the windows, which showed forward as the glare of light fell upon them, from the fact of those being the parts of the building where most light was concentrated, and which caught the eye first. Instead of producing harmony of colour, the eye in the first instance was caught by the unfortunate effect of red and blue, which he thought produced an unfavourable influence as regarded the general colouration, and interfered with the aerial tint of the light grey in the roof.

Mr. E. Rimmell wished to know whether it was intended that the eastern annexe should receive any further amount of decorations. In its present state it had a very barn-like appearance. A much larger amount of painting had been bestowed upon the western annexe, which would very soon be destroyed by the steam and smoke from the machinery. He also wished to ask a question upon another subject. He and other exhibitors

had been asked to hang bannerets above their stands, to increase the decorative appearance of the building, but he thought they ought to be limited to certain colours, whilst at present they were allowed to select their own colours, and hang them where they pleased. Unless there were some rules as to the colour and pattern of their bannerets, anything but a good effect would be produced. He thought this matter might be subject to some general control.

Mr. Peter Graham could not refrain from adding his humble mite of praise for the manner in which Mr. Crace had undertaken and carried out this work of decoration. It was a task of no ordinary difficulty, as might be inferred from the fact that all those who were called upon to try experiments failed, and all appeared to be quite "at sea" as to what should be done till Mr. Crace himself was called in. He had to deal with a building of extraordinary dimensions; he had to adapt all his ornamentation to the various proportions of that building; and he had to do this at a time when large masses of scaffolding prevented him from seeing what the general effect would be. He had nothing but his own experience and taste to guide him, and no opportunity of trying experiments as to the effects. Under these circumstances it was undoubtedly a great success. Whether they regarded the form of ornamentation as adapted to the building, or the harmony of the colours employed, he would say, in his own opinion, it was a great success. At the time when Mr. Crace was first painting one of the ribs of the roof, to judge of the effect, he (Mr. Graham) did think he was studying rather the decoration of the building itself than with reference to its suitability for the goods to be shown in it; and he took the liberty of expressing that opinion to him at the time, and he also thought the experiment of the alternate red and blue a dangerous one. He was, however, free to confess the effect was, to his mind, harmonious and pleasing; but he still thought a loftier and more airy effect would have been obtained if those colours had not been alternated. He also thought the cutting the columns in half where the galleries intersect was open to question; but as regarded the picture gallery, he considered the success was perfect, and that the pictures would be shown to very great advantage. Upon the whole, he thought the Royal Commissioners and the public were indebted to Mr. Crace, not only for what he had done within the building, but for the description of it with which he had favoured them that evening.

Mr. John Dillon was extremely anxious that the gentleman who had favoured them with this paper should not misunderstand the criticisms which had been made. He (Mr. Dillon) had heard a great many criticisms of the building itself, and should probably hear many more; but he was much struck with the distinction which had been drawn by Mr. Wallis at the commencement of the discussion, viz., that they must look rather to the purposes for which the building was designed, than to either its architectural or decorative merits as a building. He had heard it censured as a work of architecture, and comparisons had been made with other buildings abroad; but it was to be borne in mind that it was to be used merely as a place for the display of goods, and was not so much to be regarded as a work to be tested by the strict rules of architecture. The same remarks would apply to the decoration of the building; and in that respect it might be said Mr. Crace had drawn a proper distinction. He had had in view the suitability of his colouring to the objects the building would contain; and when he stated that in the lower portions he had applied subdued colouring, so as not to interfere with the beauty of the goods exhibited, and, as he ascended higher, had introduced more brilliant colours, to harmonise with the goods below, he had certainly acted upon a right principle. They were bound in looking, both at the building and at its decorations, to consider its object, and not to regard it as a specimen of architecture. In that view he felt that they owed Mr. Crace a debt of gratitude, and he begged, as far as he was personally concerned, to thank him for what he had done.

Mr. Waterhouse Hawkins remarked that all that could be said in the way of criticism upon Mr. Crace's work, as well as upon the description he had given of it, must be only a reiteration of the admiration and praise which every work produced upon sound principles like those enumerated and carried out by Mr. Crace must at all time ensure. That the decorations of this building had been no ordinary effort, they must all readily admit, and those who had seen it inside or outside must have at once recognised the immense difficulty of making any scheme of decoration which should be suitable to its architectural features—if he might be excused for using that word in connection with the building. Any scheme of decoration which would have, architectural principles for its basis Mr. Crace had wisely dispensed with, and had only looked upon the structure as a fit means to the end in view—the display of the materials to be exhibited within it. It was customary, with their national feelings and characteristics, to express their admiration of success in proportion to the difficulties overcome, and if this were so, there must be one unvarying theme of praise for that which Mr. Crace had done, when they considered the immense difficulties which he had to grapple with, either as regarded the contradictory forms of which the building was composed, or the difficulties of space, of time, of situation, and circumstances under which he conceived and carried out his design. It was therefore, unquestionably, a remarkable effort of the human mind to conceive such a system of decoration as this, with little or no opportunity of trying experiments, and judging of the effect that would be produced. He thought it would be admitted that the building of 1851, of which he (Mr. Hawkins) had had so much experience, was overpowered by light, and consequently it was scarcely possible to criticise Mr. Owen Jones' system of colouring. Yet they could not but recognise that it was desultory, and the effect in many instances anything but congenial or beneficial to the objects exhibited below, particularly in the case of the textile fabrics—such as silks, satins, and brocades, which were not placed under such favourable circumstances as they would be in the present building. He had only to add, further, that, considering all the circumstances, they could but express their unequivocal thanks to Mr. Crace for what he had done.

Mr. Crace, in reply upon the discussion, said perhaps it was hardly in good taste to say he was almost disappointed. He thought the discussion would have been a little more vigorous, from the sort of criticism which was offered pretty plentifully in various quarters at the commencement of his work; and if he might disclose his secret thoughts on this occasion he would say he had proposed the paper read that evening as the only legitimate way that seemed open to him to meet those criticisms. With respect to the observation which had been made with reference to the clerestory windows, he thought the gentleman who spoke on that subject could have hardly realised the extent of surface throughout that building. How many windows there were and how many hundred feet there were in each window he could not say; but the aggregate surface was so tremendous that any application of stained glass, except upon the voluntary principle, would be quite out of the question. He begged to thank Mr. Hope for the kind observations—complimentary on the whole—which he had made in reference to the colouring. He should be prepared to say to any one who objected to the introduction of these colours upon the principals, what would they put in the place of them?

Mr. Hope said he did not object to the introduction of the colours, but only to the alternation of the red and blue at points where they were exposed to the most brilliant light.

Mr. Crace felt the force of what Mr. Hope had expressed, but there was always considerable difficulty in decorating any long repeat of the same form with

any one colour. In this instance he might safely say he "stuck to his colours"—for if one shade of colour only had been used for these principals, they would have looked undefined, and like a cloud in the distance. The effect of any one of the principals in the western annexe was agreeable in itself, but they looked a perfect cloud when seen in the repeat. The question was not how one would look, but what would be the effect of the whole. Then with reference to what Mr. Hope had said as to the continuity of the line of light from the clerestory windows; no doubt it was a just observation. The object had been to get all the light possible from these windows; but he had heard it suggested by several people—and he coincided with it—that it would produce an agreeable effect to introduce some intervals between them, so as to break this line of light. But this was difficult; the object was to get the light, and any alteration now would be extremely costly. The next point was the observations with respect to the eastern annexe. It must be apparent to all that in carrying out a large work like this, there were difficulties not perhaps generally known. Towards the completion of the decorations, as the season advanced, the skilled labour which was necessary became scarcer every day, and it was with regret he stated that he was afraid it was from that cause alone that the eastern annexe would not be so satisfactorily completed as it was desirable it should be. With regard to the bannerets, he quite agreed with the observations of Mr. Rimmel. Some time ago, the invitation to have banners was given by circular to the exhibitors. He could not do wrong in saying that he protested at the time against a general profusion of banners in the important parts of the building. He stated that to have a heterogeneous mass of colours brought together would be most destructive to the appearance of the building, and he was happy to state that in the nave, at least, the banners would be under his direction; and he sincerely trusted all those who had committed to them the choice of banners, would bear in mind that white must be absent from them. There was no colour more destructive to the general colouring of exhibited articles than pure white; and where a quiet tone of colouring had been adopted, it was desirable to avoid any very prominent spots. Therefore, very intense red or blue, very pure white, and very gaudy yellow must be kept out of these banners, and only the most quiet colouring must be maintained throughout. He hoped these observations would be received in good part by those who were likely to provide these banners, and that they would be discreet in the colours they employed. The general expression of opinion with reference to this work was of such a kind as amply to compensate him for the anxiety of mind he had felt in carrying it out.

The CHAIRMAN said it was now his duty to make a proposition to the meeting which he was sure would meet a ready sanction—it was to propose a vote of thanks to Mr. Crace for the paper they had heard. For his own part, although he had had great pleasure in attending this meeting, and felt highly honoured by the compliment of being asked to preside over it, he had, nevertheless, come as a listener, and not as one who had any pretentions to offer any opinions of his own upon the subject which had engaged their attention that evening, and with which probably most in the room were better acquainted than he was. He thought it must be most gratifying to Mr. Crace to hear the comments that had been made. It was evident that he had had committed to him a task of no ordinary difficulty, and it required no artistic knowledge to see that in the decoration of this building the great thing to be kept in view was the uses to which it was to be put rather than the ornamentation of the building itself. Mr. Crace had very clearly stated that as the principle on which he had acted and which had induced him to adopt the style of ornament he had introduced. He thought on the whole the friendly criticism which had been made on what he had done, led them to entertain a confident expectation that the work would be worthy of the great occasion for which it was designed, and he agreed with Mr. Crace that the full effect could not be realised until the building was occupied by its contents. He thought it was matter of regret that the subsidiary decorations of the building by the exhibitors themselves had not been placed under the control of Mr. Crace's good taste. It would be unfortunate if the general effect were marred by the introduction of injudicious decorations in various parts of the building, and he thought it desirable, in a discussion of this kind, to call attention to that point. They were now within a very few weeks of enjoying that great gratification which they anticipated from beholding this building stored with its magnificent contents, and there could be no better preparation for that event than hearing the excellent observations of Mr. Crace, and the interesting discussion that had taken place upon them. He was quite sure he was only carrying the wishes of the meeting into effect when he proposed that they should give their thanks to Mr. Crace for his kindness in favouring them with this very interesting paper.

The vote of thanks was then passed, and acknowledged by Mr. Crace.

The Paper was illustrated by various coloured drawings and diagrams, showing the decorations of the building, as well as by a series of drawings of Italian decorations made by Mr. Crace, jun.

The Secretary announced that next week being Passion Week, the Society would not hold a Meeting; and that on Wednesday evening, the 23rd inst. a Paper, by Mr. Samuel Sidney, "On the Effect of Prizes in Improving Manufactures," would be read.

RATAN DEEP-SEA ELECTRIC TELEGRAPH CABLE.

Mr. C. S. Duncan, the inventor, in adopting the Ratan Cane as an external protecting cover to the conducting wire and insulating medium, desires to employ a material which has not hitherto been used for deep-sea cables; he has been guided in the choice of cane by its being a fibrous substance, having great flexibility, lightness, strength, and durability when submerged. The cane has long been used by the Chinese and the Malays for cables as applied to anchors, and for making fast their junks to the banks of the great rivers and canals throughout China; and the testimony of officers in the Royal Navy, and merchants of great eminence, who have resided for many years in that country, corroborate this fact; and the ocean animalculæ are not known to touch or destroy it.

The natural silicated rind has been submitted to great hydraulic pressure, and is found to be impermeable to the passage of water into the interior fibre, and, like all other woody substances when long submerged, as in the case of the timbers of a vessel that has foundered at sea, becomes eventually petrified and indestructible. The cane itself neither possesses resinous, oleaginous, nor saccharine matter; consequently, no destructive chemical change is effected by submersion.

The cane can be obtained in inexhaustible quantities in Lower Bengal, Ceylon, Singapore, and China, in lengths of fifty feet and upwards, of an uniform guage when properly selected, and at a price so moderate as to render this cable the cheapest that can be constructed, according to the statement of the inventor.

Cane is susceptible of many combinations, either with or without wire, laid on in a spiral form, and is prevented from kinking by using strands, either of wire, hemp, or cane, laid on at right angles to the length.

The joints under test are as strong as the cane itself, and arranged to fall at intervals so as to break joint.

In paying out the cable, very slight machinery appears to be required; and instead of its descending perpendicularly from the ship's side, it will submerge in an even or horizontal position, having sufficient weight to overcome flotation, and cause it to gravitate gradually to the bottom of the ocean.

The Ratan cane, as a non-conductor, will not generate heat in the hold of the vessel, thus keeping the insulating medium at all times cool and equal, and allowing the tests to be carried on with greater certainty. The advantages, therefore of this cable may be summed up thus:—

1st. Its great flexibility, without elasticity or compressibility.

2nd. In not being affected by heat or moisture.

3rd. Its being imperishable in sea water.

4th. Its strength and perfect protection to the insulating medium. All such media being too tender to be exposed as outer coverings, from certain risk of puncture, abrasion, shifting from vessel to vessel, pressure on lower sheaves of the cable when coiled in the hold from the super-incumbent weight, and injury from over-heating.

5th. The silicated rind having a complete natural security against the attacks of animalculæ.

6th. Its pliability in coiling, facility in paying out, and submerging in an even or horizontal line without kinking.

7th. The buoyancy and resilient properties of the cane, rendering it less susceptible to friction and abrasion.

Finally, the inventor states that it can be manufactured at a price one-third less than any other cable.

The following are stated to be the results of tests which have been applied to this cable:—

The cable when covered with cane alone—weight ¾ ton. Breaking strain, 2½ to 3 tons.

When combined with steel wire—weight not exceeding 1¼ ton. Breaking strain, from 4 to 5 tons.

When constructed in this latter manner, the sinking or dead weight of the steel wire is compensated for by the floating power of the cane, and the cable would descend in a horizontal position to the ocean bed slowly and without strain, and capable of spanning any sub-oceanic valley three or four miles in width, without risk of breaking.

Diameter, in every instance, within an inch.

BRITISH MUSEUM.

In order to give the public generally the utmost facilities for seeing the British Museum during the time of the International Exhibition at Kensington, the trustees have laid down the following special regulations:—

1. That the Museum, instead of being closed from the 1st to the 7th of May next, be closed on Monday, the 28th of April, and re-opened on the following Monday, the 5th of May.

2. That from the 5th of May to the 30th of August inclusive, the reading-room be kept open for readers, as usual, daily, Sundays only excepted; but not later than five o'clock.

3. That the Museum collections, including those parts of the library of printed books and manuscripts to which visitors are now admitted on public days, be kept open daily, Thursdays and Sundays excepted, from ten o'clock in the morning till eight in the evening, during the months of May, June, July, and to the 16th of August, inclusive, but till half-past seven only for the remainder of that month.

4. That during the same months and days the reading-room and a small portion of the libraries annexed to it, as well as the whole of the North Library, with the exception of its western extremity, be open for the admission of the public generally, only from five o'clock to eight, or half-past seven, as before mentioned; and that from nine to five o'clock none but readers, for the purpose of study, be admitted to the reading-room, or to any of the libraries, except such of the rooms as are usually accessible to visitors throughout the year on public days.

5. That after five o'clock the reading-room and the libraries generally be not used for the purposes of study.

6. That Thursdays be reserved for cleaning the several departments, and that no visitors, excepting readers, be admitted into the Museum on that day.

NEW SOUTH WALES AND THE INTERNATIONAL EXHIBITION OF 1862.

The following is abridged from the *Sydney Morning Herald*:—

The articles of the produce or manufacture of New South Wales, intended to be forwarded to the International Exhibition in London, have been exhibited to the public, in Sydney, in the hall of the School of Arts. The local exhibition was opened on the 16th of October, and closed on the 7th of November, and proved during the three weeks an object of great attraction to the public. The charge for admission on four days in the week, and during every evening, was sixpence; the low charge, in connection with the beauty, the excellence, and the tempting variety of the articles exhibited, drew large crowds to the hall, no fewer than 2,660 visiting it in one day. The total number of visitors was 14,894, and the amount received for admission was £423. In order that the public might have every opportunity of inspecting the articles which are to represent the colony at the Great Exhibition, they were on view up to the day before the packing commenced. The goods are expected to measure about two hundred tons. Mr. Sedgwick Cowper, the Secretary to the Exhibition, proceeds to England in the *Vimeira*, which was to sail on the 1st of December last.

A catalogue of the articles forwarded from the colony has been published by the Commissioners. The first portion of the catalogue is devoted to a description of the specimens of woods, compiled by Sir William Macarthur and Mr. C. Moore. Interesting papers follow upon the cereals, fibres, and wines. Next follows a letter from Mr. Ledger, accompanying the stuffed alpacas, giving all the information which every one who inspects his beautiful specimens must be anxious to possess. Under the head of mineral products are elaborate papers on coal fields, and on the gold fields, communicated by the Rev. W. B. Clarke. These are followed by some succinct particulars respecting the production of copper, iron, and other minerals and rocks. The detailed catalogue of the deposits encountered in sinking for gold at each of the diggings in the colony, gives a complete geological description of the successive strata, and also a statement of the depth of each. The catalogue concludes with a list of the miscellaneous articles contributed, and an alphabetical list of exhibitors.

Some particulars respecting the more important articles of colonial produce and manufactures represented in the Exhibition are here given.

The Stuffed Alpacas.—This group was decidedly the most attractive object in the Exhibition. The graceful beauty of the animals, their healthy condition, and long soft glossy fleeces, were topics of universal admiration, while much astonishment was expressed at the extraordinary length of fibre of the fleeces, particularly in the younger lambs; in addition to which those who took a practical view of Mr. Ledger's service recognised in the now thoroughly acclimatised animal the source of great future productive wealth. The slaughtering and preservation of the specimens were carried out upon the recommendation of Mr. Ledger, who urged that the reproduction from the progeny of the alpaca and the llama was an important and scientific fact, which ought to be represented at the International Exhibition, as the specimens would refute the erroneous theory frequently propounded of the non-reproductive power of the progeny resulting from a

cross between the llama and the alpaca, and would also prove by their wool and general appearance that each successive cross has been an improvement on the previous one. In a letter, accompanying the specimens addressed by Mr. Ledger to the Commissioners, he alluded to the peculiar characteristics of the llama and the alpaca, the llama being the larger animal, having short coarse wool, bare legs, belly, head, and face; long neck, with very short wool, and large ears; while the pure alpaca has a smaller body, finer, heavier, and longer staple of wool, legs covered to the feet, short neck with long fine wool, head and face covered, and short ears. The dash of the llama blood infused into the alpaca is alleged to have produced a "larger-framed, hardier-constituted, heavier, finer, and more glossily-fleeced animal than could be obtained by the close *in and in* breeding so zealously carried out by the Indians in Peru." The following is the description given by Mr. Ledger of the seven specimens:—"No. 1. Brown and white pure breed female llama, aged five years and three months. No. 2. Gray pure male alpaca; age, two years nine months. No. 3. Black, cross between similar animals to Nos. 1 and 2; age, two years nine-and-a-half months. No. 4. Brown, from dam similar to No. 3, by sire ditto to No. 2; age, one year eight months. No. 5. Brown, from dam similar to No. 4, by sire ditto to No. 2; age, one year three months. No. 6. Black, from dam similar to No. 5, by sire ditto to No. 2; age, seven months. No. 7. Lamb, suckling from dam similar to No. 6, by sire ditto to No. 2; age three months."

Wool.—The early period at which the local exhibition was held rendered it impossible to present specimens of the new clip of wool. A supplementary exhibition was to be held at Mort's auction rooms, early in January, when a large collection of the fleeces was expected.

Tallow.—The production of tallow was poorly represented, there being only one sample cask exhibited by Mr. John Nott, of West Maitland, and some specimens of alpaca tallow. Raw hides, an important article of produce, are entirely unrepresented.

Oils.—The oils exhibited were numerous. One of the most noticeable samples was that of oiline, or tallow oil, exhibited by Mr. Kirchner, of Grafton. There were two samples of neatsfoot oil, the one forwarded by Mr. J. Youdale, of West Maitland, and the other by Mr. H. Bell, of Pitt-street. A sample of the same article purified was exhibited by Mr. E. W. Rudder, of Kempsey, Macleay River. In addition to these, Mr. Harbottle forwarded samples of sperm oil, of southern whale oil, and dugong oil.

Silk.—There were six samples of raw silk exhibited, all very neatly got up.

Cured Meat.—Preserved meats have latterly formed an important article of export, but the principal producers did not send any samples to the Exhibition. Some samples of sides of bacon and a cured pig, exhibited by Messrs. Solomon, Vindin and Co., of West Maitland, were placed in a very prominent position. Some cured hams were exhibited.

The manufacture of cheese was represented by some samples.

The other samples of animal products are of a miscellaneous character, consisting of whales' teeth, goose feathers, bone manure, beeswax, cochineal, and honey.

Indigenous Timbers.—Colonial timber was the best represented at the Exhibition of any of the indigenous products. The Commissioners were fortunate in being able to avail themselves of the services of gentlemen who had extended knowledge of forest timbers, and who were prepared to enter with zeal and interest upon the task of procuring specimens of them. Sir William Macarthur and Mr. Edward Hill undertook to collect specimens of indigenous woods from the Southern districts, and Mr. Moore, director of the Botanic Gardens, volunteered to procure specimens from the Northern districts. The result of the zealous labours of these gentlemen was a magnificent collection of woods, which will undoubtedly constitute the chief feature of the contributions to the International Exhibition. The short notice afforded for procuring the specimens necessitated their being cut while in a green state; many of them are consequently splitting up, and will, not, therefore, appear to the best advantage. The exquisite grain of the specimens has naturally been their chief attraction with visitors to the Exhibition; and this is a very important quality, many of the woods being well adapted for panels and other ornamental purposes. The woods are cut in slabs of about four feet in length; their width is that of the trunk of the tree, the size of which is thereby indicated; they are all cut smooth and polished. The specimens from the southern districts are about 270 in number, and represent all the more valuable indigenous timbers of the colony. The Eucalypti run from one to forty-nine, every variety of gum being exhibited. The specimen numbered one, is a piece of white iron bark; this timber stands first in durability and strength, and when tested at the Paris Exhibition, was found to bear upon a cubic inch 11,000 lbs. pressure; the box of Illawarra, of which there is a good specimen, also stood a very severe test; another variety of box is believed to be well adapted to wood engraving. There are also some very fine specimens of the forest oak, generally used for shingling, but showing a very rich grain. The white beech, used for decking small crafts, is a noticeable wood. Amongst the other valuable woods represented, may be mentioned several varieties of stringy bark, used extensively for flooring boards; spotted gum, used for shipbuilding; tea tree, the texture of which is very close, valuable for underground work; red ash, mahogany, and black butt, a trunk of which was lately found to measure 41 feet in circumference.

The specimens collected by Mr. Moore in the Clarence and Richmond districts are 115 in number, and consist principally of trees referred to under the designations of "Rich Brush" and "Cedar Brush." Some of the red cedars are stated by Mr. Moore to be above ten feet in diameter, and to yield, when cut down, as much as 30,000 feet of saleable timber. A number of interesting samples of colonial woods were exhibited by Mr. Rudder, of the Macleay River. One of them was a piece of iron bark from a tree that was cut down in the year 1836; it has since been constantly exposed to atmospheric action, and is now perfectly sound. Another specimen was a piece of ash that had been used as part of a mill, and had been exposed to all weathers for about 15 years. The other specimens consisted principally of pine, mahogany, iron bark, gums, mangrove, and cedar. Mr. Dawson, colonial architect, also contributed some specimens of woods; they consisted of appletree, shingle bark, cedar, red-gum, pine, myall, and oak. Some valuable specimens were also exhibited by Mr. Cuthbert, ship-builder.

Amongst the other samples showing the durability of the native woods was a piece of flooded gum, taken out of the steamer *William the Fourth*. This vessel was built in the year 1830, on the William River, by Messrs. Marshall and Lowe, and the whole of her timbers are stated to be as sound as the sample exhibited.

Cereals.—The samples of cereals were very numerous, and attest the adaptability of the soil and climate of this colony to the cultivation of grain. They were sent from different parts of the colony, the largest exhibitor being Sir W. Macarthur. There were six samples of wheat, all very finely developed. There were six exhibitors of maize, sent both in cob and in bottles. Only one sample of rye was exhibited, and no samples of oats or other kinds of cereals. There were five exhibitors of wheaten flour, and two of flour of maize. There were samples of potato flour and potato starch, and seven very fine samples of arrowroot.

Cotton.—The specimens of cotton were numerous and very creditable, fully demonstrating that cotton can be successfully cultivated in the colony.

Mineral Specimens.—The production of gold—at

present the most important of our mineral resources—was very completely represented. The various kinds of gold, and the conditions under which it is found, are illustrated by numerous samples, in three cases, prepared under the direction of Captain Ward, R.E., of the Mint. One of these contains forty-eight characteristic specimens of the various gold-fields; the most noticeable of them is a nugget from Stony Creek, 13 ounces in weight. There are fifteen samples of gold from the Northern district, the same number from the Western, and eighteen from the Southern district. A second case contains thirty or forty specimens of auriferous quartz from some of the reefs which are worked, or are considered capable of being worked, with profit. One of the finest of these is a sample from the Caledonian reef at Adelong, and by its side is a small ingot of the gold, worth £4 2s. an ounce. A third case contains samples of strata, arranged in small bottles, illustrating the alluvial districts of the colony.

The specimens of copper ore are very unmerous and are all beautiful, and with one or two exceptions, sent from the Western district.

Specimens of copper are exhibited by Messrs. Morehead and Young, obtained from the Good Hope Mines, near Yass. They are of a rich character, consisting of red oxide and blue and red carbonate, intermixed with quartz, and oxide of iron. The other specimens, sent by Messrs. Morehead and Young, are chiefly from the Cadiangullong Mines. Some of these are of very large dimensions,—one weighing upwards of 6 cwt., and others of almost equal bulk. There are also some fine blocks of ore from the Canoblas mine, in the same neighbourhood, situated about twelve miles from Orange, in the county of Bathurst. These are exhibited by Mr. S. Samuel, who has also sent a variety of other specimens of the same product. Amongst these, was a specimen weighing about four hundredweight, of rich ore from the Ophir mine. There are likewise some ingots smelted by Mr. Christoe, at the Ophir copper mine. The Canoblas and the Cadiangullong mines are the same lodes, distant about a mile, and are both being worked—the former by Messrs. Morehead and Young, who employ a large number of men, and have raised a considerable quantity of ore—it is estimated about six hundred tons. Furnaces are being erected for smelting, and it is expected that in the course of a few months large quantities of refined copper will be sent to Sydney for shipment. The lodes at these mines are said to be about seventy feet in width; they produce ore in large quantities, and of great richness.

Some fine specimens of copper ore are exhibited by Mr. Croaker, of Bathurst, from a mine worked by him about twelve miles from that township. About eighty tons of ore, averaging over twenty per cent., have been sent from this mine during the last two months.

The iron mines are represented at the Exhibition by several interesting specimens. The mine best known is the Fitzroy mine, at Mittagong, on the Southern Road, seventy-five miles from Sydney; some fine specimens of the iron are exhibited by Mr. J. H. Thomas, of the Railway Department. The iron at Mittagong lies in a compact mass, and extends to a considerable depth, covering, as visible on the surface, an area of about sixteen acres.

Another sample of iron ore is thus labelled:—"From the surface of the ground on the property of Mr. H. B. Lockyer, on the Great Southern-road, near the Wollondilly river, contributed by Mr. J. H. Thomas, of the Railway Department." The vein at this mine, which is about 90 miles from Sydney, is, as visible to the eye, about four hundred yards in length, and fourteen feet in width. A shaft has been sunk alongside it, and a level driven at a depth of twenty feet to the ore.

The ore in both of these mines contains above 60 per cent. of iron. The samples will, upon the closing of the International Exhibition, be forwarded to Mr. Bessemer, the well-known inventor of a process of steel manufacture, by whom they will be subjected to a series of tests to ascertain their value.

Some specimens of iron are exhibited from the back of the main lode of Cadiangullong mine, where there is also a rich copper mine.

There are also exhibited a few specimens of lead and silver ore. Some of these are from Manar, the property of Mrs. Gordon, near Goulburn; the shaft has been sunk to a depth of eighty feet. The other specimens are from Burrowa, and from Jobbins' mine, near Yass.

A few beautiful specimens of marble are exhibited.

In addition to the above, there is a numerous miscellaneous collection of minerals and rocks. Some building stones are exhibited by Sir William Macarthur, Mr. E. T. Blacket, and Mr. A. Dawson; some native alum by Mr. H. Moss, of Shoalhaven; and some cobalt, by Mr. E. W. Rudden, of the Macleay River.

Wines.—The samples of colonial wines represent all the large vineyards in the colony, with the exception of those in the Murray River district; some samples of these will, however, arrive in time for shipment to England. From the statement of the jurors who tasted the wines, it would appear that the samples now sent home are fully equal to those which took so high a position at the Paris Exhibition; a no less favourable report of the wines is consequently expected. Sir W. Macarthur exhibits a large variety of the white, red, and muscat wines from the Camden vineyard. Mr. J. E. Blake sends several varieties of his white and red Kaluda. Mr. A. Windeyer, of Kinross, exhibits hermitage red and Madeira white. The principal other samples sent are—porphyry white, exhibited by Mr. Henry Carmichael, Seaham; Verdeilho and claret by Mrs. Bettington, Oatlands; red and white by Mr. A. L. M'Dougall, Baulkham Hills; red and white Cawarra by Mr. H. L. Lindeman; and Wivehoe Madeira by the Hon. Charles Cowper.

Specimens of Coal.—A collection of mineral specimens, illustrating the various coal formations, was contributed by Mr. W. Keene, Examiner of Coal Mines. The specimens are between two and three hundred in number, and represent the several beds that have been gone through in search for coal, commencing with the sandstone and ending with the granite, each of the beds being represented by characteristic specimens.

Models.—Several models of various kinds were exhibited, the most noticeable of which were those of improvements in railway construction. The principal of these was the model of a structure, called a "key bridge," designed by T. Woore, and executed by Messrs. James and Davis. The distinguishing feature of the key bridge is stated to be "a new disposition of timber struts arranged in a series of triangles to form a trussed beam, in such a manner that the strain rests solely on the longitudinal fibre of the timber, and that the whole is incapable of longitudinal expansion."

Mr. Woore also contributed a model showing a new mode of supporting iron rails.

A model of a horse railroad and carriage was exhibited by the inventor, Mr. Peter Brawen.

A model of the Sofala diggings—the first gold-field discovered in Australia—was constructed under the direction of the Commissioners, by Mr. J. C. Low, the author of a large and elaborate model of Ballarat exhibited in Melbourne last year. The model is on a scale of forty feet to the inch, its size being ten feet by six, and the area comprised a mile by half a mile.

Cabinetware.—The specimens of cabinetware exhibited were few in number, but some of them are of great merit, both as regards design and workmanship.

The Fine Arts.—The few oil and water-colour paintings forwarded to the International Exhibition will prove that the fine arts are cultivated here with considerable success. The most striking of these oil paintings is an excellent portrait, by Claxton, of the late Archdeacon Cowper. Mr. O. R. Campbell exhibits a view from the North Shore. The other two pictures in oils, also views of colonial scenery, are by Mr. W. Davis, of Pyrmont, and

by Mr. T. A. Newall. Eighteen water-colour drawings are exhibited.

The photographic pictures sent to the Exhibition demonstrate the perfection to which the photographic art is cultivated in Sydney. Some few pictures have been taken expressly for transmission to England; but generally the photographers have contented themselves with the exhibition of their old productions. All the popular styles of portraiture are represented, and creditable specimens are shown both of portraits on glass coloured, and of paper pictures. Mr. Dalton has forwarded six or seven portraits of aborigines and half-castes admirably photographed.

Miscellaneous Articles.—First, amongst the articles not above enumerated ought to be mentioned several exquisite specimens of work in precious metals, designed and manufactured by colonial artificers. The specimens of account books, book publishing and binding, displaying a high degree of taste and superior workmanship. The manufactures of articles from leather are numerous and beautiful, the principal specimens being saddles, harness, and boots. The manufacture of textile fabrics is represented chiefly by colonial tweed and by clothing made therefrom. Amongst other manufactured articles creditably represented, may be mentioned potteryware, sugar and confectionery, soap, candles, and blacking. The other miscellaneous articles are numerous, and very varied in their character, including some interesting collections of objects of natural history and aboriginal implements.

Home Correspondence.

THE COLONIES.

Sir,—I intended when at the meeting of Wednesday 26th March (but was prevented by the press of speakers) to have said a few words in corroboration of what appears to be the leading idea of Mr. Ashworth, as regards colonial views and tactics, namely, that although the colonies do very willingly receive the payment of their Governmental expenses from the exchequer of Great Britain, yet, in general, their measures of public policy are dictated by a regard to their own interests, without due consideration for those of Great Britain; and further, that in practice the imperial colonial administration is quite powerless to prevent the interests of Great Britain being thus dealt with. And my corroboration of this would be the instance of the extraordinary patent law of Canada, which enacts that a legally settled inhabitant of the province may have a patent for his own invention, or for an invention imported from any country save the United Kingdom and the United States of America; but no other subject of her Majesty, nor citizen of the United States, shall have a patent for an invention in Canada. This was passed by the Canadian legislature, and approved by the imperial Government, as was also a unique clause, contained in the same act of the legislature, that any man who should have a patent granted to him in Canada should put on every article sold or issued by him a statement that it was so patented, or be liable to a fine and imprisonment, like any other criminal! As regards our general colonial administration here, it is to be remarked that, although we have now separate patent laws in many of the colonies, yet the Colonial office declines to do anything to facilitate the British patentee extending his rights thereto, leaving him to encounter difficulty and expense, just as if the colonies were so many foreign states over whom we could exercise no influence. I am, &c.,

J. W. CAMPIN.

London, 31st March, 1862.

PARAGUAY.

In the great array of countries, large and small, which will be represented at the forthcoming International Exhibition, one will be wanting which had an honourable place in the Great Exhibition of Paris of 1855, and I trust it may not be uninteresting to show what that country is, and wherefore she will not be represented.

Paraguay, one of the central States of South America, is a country with which we are as yet but imperfectly acquainted, but which has many claims to our consideration and sympathy. For a long time under the domination of the Spaniards, by whom it was discovered in 1515, Paraguay became a favourite centre of Jesuitical influence, until at last, in 1811, with the growth of national sentiment, a pacific revolution was accomplished, and she constituted herself into an independent republic. Meeting, however, the opposition of all the surrounding states, Francia, by whose indomitable will the revolution was effected, resolved at all costs to defend the sovereignty of Paraguay, and for that purpose resorted to the strange expedient of shutting up the country for nearly thirty years from all contact with other nations. This policy of estrangement was, of course, highly prejudicial to Paraguay, and at his death, in 1840, it underwent a complete change.

Don Carlo Lopez, the first and present president of the republic, is a man of great ability and energy, and of liberal and expanded views, and he soon introduced Paraguay into the family of civilised states, opening her ports to every country, and entering into regular treaties with European and American States; and at this moment the president and people are working together in raising that little republic to a position of dignity and prosperity.

The limits of Paraguay are well defined by the great rivers by which she is surrounded, and which separate her from the Argentine Republic, Brazil, and Bolivia. The population is small, being scarcely half the population of London; and the capital of the republic, Asuncion, has only 50,000 souls. There are three distinct races in Paraguay. There are the Indians, of American origin; the whites, of European origin; and a few negroes, of African origin; and, by a mixture of races, there are besides the Mulattoes and Creoles. The Indians belong to many nations, but the Guaranies occupy a vast territory in South America, and their language still prevails extensively in Paraguay. This language presents many features of extreme interest. Naturally very observing and imitative, as all primitive nations, the Guaranies formed their language by using the noise of things or the cries of animals as signs for ideas, and they succeeded in creating words whose vocal sounds represent the impressions of the mind working upon the senses.

The climate of Paraguay is warm and dry, the temperature varying from 71° in June, or winter season, to 90° to 100° in January, or in summer. The Paraguayans are generally well constituted and sufficiently robust, of middle size, and light complexion. Most of them have dark eyes and hair, and beard of the same colour. They are not so strong as the Europeans, but they are light and supple, and generally enjoy good health and attain an advanced age. As a whole the country may be considered healthy. Fever is very rare, and typhus is not known.

And now as to the productions.—In the mineral kingdom Paraguay abounds in iron, marble, and copper. Mercury is also found, and it is quite possible that gold may yet be discovered. The vegetation of Paraguay is beautiful and vigorous; and as to the animal kingdom, though not so rich as European States, she has a large variety. There are the caraya, or simia belzebuth, the wild pig, the deer, the jaguar, or American tiger, and the puma, or American lion. She has numerous birds, reptiles, fishes, and insects in great variety. Horses and cattle are most abundant. Agriculture is the principal industry of the inhabitants. Of tobacco they succeed in getting three crops a-year, and the quantity produced exceeds 15,000,000 lbs. Manioc, or tapioca, a root used as potatoes in this country, is largely cultivated. The cultivation of sugar has made but little advance. Cochineal is most abundant. Cotton grows almost spontaneously, and

may become a most important article of export. The quality is excellent. A sample of Paraguayan cotton was sent last year to the Antwerp Chamber of Commerce, which reported that the staple was long and fine, and very like Brazilian cotton, and of the best quality. The culture of Paraguayan tea, or yerba maté, is very important, but belongs exclusively to the Government, which gives it out as a monopoly. Hides are plentiful, and there are numerous tanneries. The foreign commerce of Paraguay has been much retarded by the bad administration of De Francia, but it is now acquiring some degree of importance. The shipping entered and cleared to and from the port of Asuncion has more than doubled between 1852 and 1858, from 10,000 tons to 21,000 tons, and the imports and exports of that port have also doubled, from £200,000 in 1852, to £430,000 in 1858. Eventually, Paraguay will be able to export jute, indigo, and other dyeing materials; and cotton especially, to which the attention of the Government is earnestly directed, will become a most valuable product.

Such is the general position of Paraguay at this present moment. The country is, no doubt, in its infancy. The victim of misgovernment and of Jesuitical intrigues, she has been kept back for a long time, and she is only now discovering what resources she possesses, and what position she is capable of achieving. But she has much to contend with. At this moment she has no representative in this country, and her relations with her Majesty's Government have been suspended. The cause of such a rupture is truly insignificant, yet it is far from satisfactory for that government to be at issue with Britain. A certain Santiago Canstatt (another Don Pacifico) went, in 1852, to Paraguay with a passport of the Uruguayan Republic. He was born at Montevideo, of a Uruguayan mother and a British father naturalised in that country. For five years he continued to pass as a Uruguayan subject, but in 1857, upon his return from a journey to Buenos Ayres, he presented himself as a British subject. Two years after this, he, with other persons, was arrested in Paraguay for conspiracy, and for an attempt to assassinate the chief of the republic, and immediately Mr. Henderson, the British consul at Asuncion, protested against the manner in which Canstatt was arrested. Afterwards Canstatt found means to communicate with the British consul and called for his interference and protection. The consul again called the attention of the Minister for foreign affairs to the subject, but the Paraguayan Government, being hurt at this interference on the part of a foreign consul with the regular execution of the law, refused to listen to his representation, and insisted in dealing with Canstatt as with any other Paraguayan subject; whereupon Mr. Henderson, having communicated with the British Government, received orders to demand, 1st, The immediate liberation of Canstatt and a compensation adequate to the sufferings he had undergone, and the injury done to his interests and his property; 2nd, A complete apology on the part of the Government of Paraguay towards the Government of her Majesty, for the want of deference to the representations addressed by the consul. Notwithstanding these demands, Canstatt and his accomplices were tried and found guilty, and five of them, including Canstatt, were sentenced to death; but after the trial, the President of the Republic saw fit to set at liberty Canstatt and eleven of the conspirators. This is the incident which led the British Government to suspend all relations with Paraguay. I shall not enter into the merits of the case, but simply suggest, that supposing the inverse case had happened, and a Paraguayan subject was apprehended in this country for felony, the British Government would never allow either a foreign consul or a foreign ambassador to stand in the way of the regular course of justice as administered by British tribunals and according to British law. Canstatt, moreover, was really not an Englishman. He was born at Montevideo, and, as such, a subject of Uruguay; and though his father was a British subject, Paraguay had reason to dissent from the opinion that the British law can wrest him from the law of the country where he was apprehended for crime. The British Government, however, thought otherwise. The consul withdrew. Reprisals were committed, and though the real subject of dispute has long ago been settled by the liberation of Canstatt, the British Government has not yet re-entered into communication with Paraguay. On the other point arising out of this question, as to whether the Paraguayan Government were right in refusing to deal with the British consul at all, I shall not pronounce an opinion. Doubtless the consul is generally no more than a commercial agent, and it is only where he has also power to deal as a chargé d'affaires, that he can presume to hold diplomatic intercourse with the Government of the country where he resides, yet where no minister of higher rank is present, it may be presumed that he is obliged to apply for redress whenever his co-nationals have been injured. A claim has been made against the Paraguayan Government in consequence of the running down of a British steamer by a Paraguayan war steamer, but that government is quite disposed to leave this dispute to arbitration, and to act generously should it be found that there was any fault on their part. I refer to these points with no intention to give a formal judgment on the question, but merely as a matter of interest illustrative of the nature of our present relations with Paraguay; and more especially to show that, although Paraguay will send nothing to the Exhibition, she possesses much that might be of extreme interest and value to all commercial nations.

I am, &c., LEONE LEVI.

10, Fararrs-buildings, Temple, April 7th, 1862.

Proceedings of Institutions.

Yorkshire Union of Mechanics' Institutes.—The annual meeting of delegates from the several Institutes in this Union and other friends of education, will be held on the 23rd April, at Batley and Dewsbury. The conference of delegates will be held in the forenoon at Batley, under the presidency of Edward Baines, Esq., M.P.; the dinner will take place in the Town-hall at Batley; and in the evening there will be a public meeting in the large Music-hall at Dewsbury. Richard Monckton Milnes, Esq., M.P., will preside, and amongst those who have accepted invitations to be present are J. Dent Dent, Esq., M.P., W. J. S. Morritt, Esq., M.P., Edward Baines, Esq., M.P., J. P. Brown Westhead, Esq., M.P., Hugh C. E. Childers, Esq., M.P., the Mayor of Leeds (Jas. Kitson, Esq.), the Mayor of Halifax (John Crossley, Esq.), E. Wheatley Balme, Esq., the Rev. A. Cassels, S. Colbeck, Esq., W. Lipscomb, Esq., &c. The second day is usually devoted to recreation, and the Local Committee have made arrangements for an inspection of some of the large manufactories for which Dewsbury and Batley are celebrated, as well as a visit to Calder Reformatory and other objects of interest. Great exertions are being made by the Committee of Management to give *éclat* to the annual celebration of the Yorkshire Institutes, and a successful meeting is confidently anticipated. The railway companies have consented to allow the delegates to have the privilege of obtaining return tickets at a single fare.

MEETINGS FOR THE ENSUING WEEK.

Mon.....Geographical, 8½. 1. M. Bensusan, "The Fiji Islands: their Commercial Resources, &c." 2. Dr. B. Seemann, "Report on the late Government Mission to the Fiji Islands."

Medical, 8½. Dr. Habershon, "On some Cases of Typhus Fever."

Tues. ...Civil Engineers, 8. Continued Discussion upon the Papers by Mr. Brunlees and Capt. Galton, on "Railway Accidents."

Statistical, 8. Mr. Frederick Purdy, "On the Earnings of Agricultural Labourers in Scotland and Ireland."

Pathological, 8.
Ethnological, 8. Mr. G. M. Tagore, Professor of Hindu Law at University College, London, "On Buddhism."
WED. ...Geological, 8. 1. Professor Huxley, "On some new Labyrinthodont Reptiles from the Edinburgh Coalfield." 2. Mr. W. Whitaker, "On the Thinning-out of the Eocene Strata of the London Basin to the West." 3. Mr. J. Bolton, "On a Fresh-water Deposit beneath the Drift, near Ulverston."
THURS...Linnæan, 8. 1. Mr. George Bentham, "On *Monodora*.' 2. Dr. T. Thomson, F.R.S., "On Lieut. Beddome's Plants from the East Indian Peninsula." 3. "On the Structure of the Mantle in *Testacella*."
Chemical, 8.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Par Numb.

Dated 22nd and 24th March, 1862.

114. Railway and Canal Bills—Fourth Report from Committee.
115. Navy (Ships of War)—Return.
119. Ordnance Surveys—Account.
120 (1) Education Commission—Papers.
30. Railway and Canal Bills (137. Dundalk and Enniskillen Railway; 138. Oswestry and Newtown, Llanidloes and Newtown, and Shrewsbury and Welchpool Railway, and Amalgamation, &c.; 139. Waterford and Passage Railway; 140. West Riding, Hull, and Grimsby Railway)—Board of Trade Reports.
48. Bills—College of Physicians (Ireland).
49. — Bastardy (Ireland).
Salmon Fisheries (England and Wales)—First Report of Inspectors.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, April 4th*, 1862.]

Dated 16th December, 1861.

3062. F. Vetterlin, 14, Scarborough-street, Goodman's-fields—Im. in breech-loading ordnance, and the projectiles to be used therewith, which may also be applied to small arms.

Dated 16th January, 1862.

119. E. H. C. Monckton, Fineshade, Northamptonshire—Imp. in apparatus for obtaining and applying motive power.

Dated 20th January, 1862.

149. R. O. Doremus and Bern. L. Budd, New York—Imp. in making cartridges.

Dated 24th January, 1862.

188. T. Morris and R. Weare, Birmingham, and E. H. C. Moncton, Fineshade, Northamptonshire—Imp. in submarine and other telegraphic communication and in apparatus connected therewith.

Dated 4th February, 1862.

291. C. M. Roullier, Paris—Imp. in the manufacture of straps, bands, chains, and other like articles.

Dated 6th February, 1862.

315. P. H. Astley, 4, Matthew's-place, Stratford, Essex, and C. Leighton, 3, Manby-grove, Manby-park, Stratford, Essex—Imp. in the construction of life boats, applicable also to ships' boats, gun boats, and other vessels.

Dated 13th February, 1862.

387. R. Hornsby, jun., Spittlegate Works, Grantham—Imp. in apparatus for thrashing, elevating, cleansing, and separating grain, and in apparatus for elevating straw.

Dated 19th February, 1862.

439. F. Barnet, 230, Oxford-street—An improved lamp or lantern for street lighting and other purposes.
441. N. Symons, 6, Cambridge-street, St. Pancras—Imp. in steam-engines for increasing the powers thereof by a different form of piston, internal top and bottom of cylinder.

Dated 22nd February, 1862.

475. G. T. Bousfield, Loughborough-park, Brixton—Imp. in apparatus for elevating hay, straw, and earth. (A com.)

Dated 24th February, 1862.

494. T. Partridge, sen., 50, Tenby-street, Birmingham—Imp. in apparatus for printing railway and other tickets or cards.

Dated 25th February, 1862.

510. J. Whitworth, Manchester—Imp. in manufacturing and preparing projectiles, and in apparatus to be used for those purposes.

Dated 27th February, 1862.

540. R. Seager, Ipswich—Imp. in the manufacture of boots and shoes, and in apparatus employed therein.

Dated 8th March, 1862.

619. A. W. Williamson, University College, Middlesex—Imp. in apparatus for generating steam, or for generating and superheating steam.

Dated 10th March, 1862.

648. J. T. Calow, Stavely, Derbyshire—An improved safety apparatus applicable to cages or hoists used in mining or lifting machines.

Dated 12th March, 1862.

678. E. G. Fitton, Ardwick, Lancashire—Imp. in machinery for winding yarn or thread on to bobbins or spools.

Dated 13th March, 1862.

682. L. Vidie, Paris—Imp. in the construction of aneroid barometers, partly applicable to steam gauges.
683. J. Cunningham and R. Cunningham, Paisley—An improved ornamental fabric, and improvements in weaving and in jacquard apparatus.
685. G. Ermen, Manchester—An improved receptacle or case for the protection of threads, of cotton, silk, or other fibrous substances when in a "spooled," "balled," or otherwise wound state, or for the reception of "tapes."
687. J. Wadsworth, Salford, near Manchester—Imp. in the construction and manufacture of moveable or adjustable heels for boots and shoes.
689. E. T. Hughes, 123, Chancery-lane—Imp. in furnaces for consuming smoke. (A com.)
691. M. Henry, 84, Fleet-street—Imp. in stuffing boxes.
693. G. Calvert, Islington—Imp. in castors.
695. J. B. Howell, Sheffield—Imp. in the manufacture of chains and chain cables.
697. W. E. Newton, 66, Chancery-lane—An imp. in armour plates for vessels of war. (A com.)
699. R. Schomburg, 90, Cannon-street, and A. Baldamus, Charlottenburg—Imp. in purifying illuminating gas.

Dated 14th March, 1862.

701. A. Quinard, 15, Passage des Petites Ecuries, Paris—A machine for manufacturing horse-shoe nails.
703. G. H. Birkbeck, 34, Southampton-buildings, Chancery-lane—Imp. in trusses and bandages, and in pessaries to be used therewith when required.
704. G. Bennet, 21, Manchester-buildings, Westminster—An imp. in the coating and covering of wrought iron for the purpose of preserving it and preventing oxidation.
705. G. H. Sanborn, Boston, U.S.—Imp. in gas regulators. (A com.)
707. G. T. Bousfield, Loughborough-park, Surrey—Imp. in machinery for digging and disintegrating the earth for agricultural purposes. (A com.)
709. M. A. Muir and J. McIlwham, Glasgow—Imp. in railway sleepers and chairs and in the mode of fixing rails.

Dated 15th March, 1862.

711. A. Coles and W. Coles, Wych-street, Strand—Imp. in the construction of trusses for cases of hernia.
713. H. Emanuel, Brook-street, Hanover-square—An imp. in the manufacture of ornaments for personal wear.
715. G. B. Pettit, New Oxford-street—An improved method of, and apparatus for heating water and other liquids, applicable also to the evaporation of liquids.
716. J. Smadja, 16, Stamford-street—Imp. in bustles and crinolines, and in materials used in their construction.
717. W. McAdam, Glasgow—Imp. in the manufacture of blocks, pulleys, and weights for window sashes and other purposes, and in the mode of applying the same.
719. J. Grant, Albion-place, Maidstone—Imp. in the construction of portable railways, and in the trucks or carriages to be used thereon.
721. S. N. De la Haye de Barbezieres, Paris—An improved construction of horse-shoe.
723. G. Hamilton, 6, Willow-terrace, Islington—Imp. in tumbler blocks.
725. W. Pickstone, Radcliffe, Lancashire—Imp. in the manufacture of piled fabrics.

Dated 17th March, 1862.

727. W. Clark, 53, Chancery-lane—Imp. in water meters. (A com.)
731. L. P. Mongruel, 7, Rue Vivienne, Paris—An improved cold vapour generator, which may also be used in the carburation of illuminating gas.
733. G. Davies, 1, Serle-street, Lincoln's-inn—Improved apparatus for drawing. (A com.)
737. W. Barber, Stockport—Imp. in the manufacture of hats.
739. J. M. Courtauld, Braintree, Essex—Imp. in power looms.
741. E. Smith, Carlisle-street, Soho—An imp. in watch keys.
743. T. Waller, Conduit-street West—Imp. in breech loading fire-arms. (A com.)

Dated 18th March, 1862.

747. M. A. F. Mennons, 39, Rue de l'Echiquier, Paris—The application to the manufacture of paper pulps of a vegetable product not hitherto used for that purpose. (A com.)
749. J. Banks, 19, Salisbury-street, Adelphi—Imp. in electro-magnetic telegraph printing apparatus or marking instruments, and the instruments or apparatus to be used in connection therewith.
750. H. Bailly, 5, Salter's Hall-court, Cannon-street—Imp. in the manufacture of paper from wood, and in apparatus used therein. (A com.)
751. T. Dunn, Windsor bridge Iron Works, Pendleton—Imp. in the construction of bridges, roofs, houses, and other structures.

753. C. Iles, Birmingham—Imp. in the manufacture of umbrellas and parasols.
755. J. A. Jaques and J. A. Fanshawe, Tottenham, Middlesex, and F. Jaques, Droylesdon, Lancashire—Imp. in the construction of elastic surface rollers.
757. J. Wright, 42, Bridge-street, Blackfriars, and H. Wheatcroft, 27, Fore-street—Imp. in apparatus or machinery for lasting and making boots and shoes.
759. F. Warner, 8, Crescent, Cripplegate—Imp. in cocks and taps.
761. J. T. Buck, New North-road—Imp. in instruments and work cases known as "Ladies' companions."

Dated 19th March, 1862.

765. R. Wilson, Patricoft, near Manchester—Imp in hydraulic presses, and in machinery or apparatus for raising or forcing fluids.
767. R. A. Brooman, 166, Fleet-street—Imp. in printing and painting upon glass and ceramic wares and upon metallic and mineral substances, also in the preparation of inks and colours for printing and painting. (A com.)
769. R. A. Brooman, 166, Fleet-street—Imp. in rotary engines. (A com.)
771. J. Cumming, Edinburgh—Imp. in the method and apparatus for distributing and setting up type.
772. G. M. Todd, 84, Hackney-road—Imp. in shuttle sewing machine, and the production of a new kind of stitch thereby.

Dated 20th March, 1862.

774. J. G. T. Campbell, 1, Hatcham-terrace, Old Kent-road—Certain imp in ships' propellers.
778. E. Field, Buckingham-street, Adelphi—Imp. in apparatus for regulating the flow of gaseous and other fluids.

Dated 21st March, 1862.

788. J. Humphreys, Tower-hill—Imp. in steam engines.
790. W. Phelps and W. R. Lymbrey, Nottingham—An improved woven fabric, and imp. in machinery for manufacturing the same.
792. W. Clark, 53, Chancery-lane—Imp. in sewing machines, which improvements are also applicable to other machinery for giving a rotating motion always in the same direction. (A com.)

Dated 22nd March, 1861.

794. T. Marsh, West Bromwich, Staffordshire—An imp. or imps. in hames for horses and other draught animals.
796. E. Owen, Bala, Merioneth, North Wales—Certain imp. in the hydraulic engines known as "turbines."
798. J. Davis, Kennington—Imp. in wind musical instruments.
800. F. W. Colls, Deptford, and P. Haden, Hackney—Imp. in consuming smoke, and in the apparatus connected therewith.
802. J. G. Jennings, Holland-street, Blackfriars-road—Imp. in the manufacture of biscuits.
804. T. F. Hale, Bristol—Imp. in valves.
806. G. Hartshorne, jun., and D. G. Ward, Dudley, and W. Wooley, Tipton—Imp. in punching or perforating metal plates or sheets, and in apparatus or machinery to be employed for that purpose.

Dated 24th March, 1862.

810. T. White, Birmingham—Imp. in the manufacture and ornamentation of nut crackers and lobster crackers.

Dated 25th March, 1862.

822. A. Fryer, Manchester—Imp. in the manufacture of sugar, and in separating liquids from sugar and other substances.
824. T. Guibal, 43, Rue des Groseillers, Mons, Belgium—Imp. in the construction of ventilators for the ventilation of mines and furnaces.
828. W. Clissold, Dunbridge Works, near Stroud—Imp. in carding engines.

Dated 26th March, 1862.

830. L. De la Peyrouse, 13, Panton-square—Imp. in the preservation of animal substances.
832. J. Wilson, Glasgow—Imp. in the apparatus used for and in the method of hot-pressing or finishing plaids, shawls, handkerchiefs, and other woven fabrics.
834. W. J. Taylor, 5, Upper Church-street, King's-road, Chelsea—An improved method of colouring Portland cement for plain and ornamental plasterer's work on the walls of buildings and other erections.
836. R. Boby, Bury St. Edmonds, Suffolk—Imp. in hay-making machines.
838. J. Taylor and C. H. Minchin, Manchester—A suspender or improved gallery for supporting the shades of gas or other lights.
840. R. Griffiths, 69, Mornington-road, Regent's-park—Imp. in weapons of warfare for naval purposes.

Dated 27th March, 1862.

844. W. Greenway, Birmingham—Imp. in the manufacture of bolts for fastening doors and for other like purposes.
846. T. G. Greenside, 6, Penton-place, Kennington-road—Imp. in window-sashes.
848. R. Edwards, Regent-street, Mile-end—Imp. in machinery and apparatus for pulverising, stamping, and washing mineral, animal, and vegetable substances.
850. J. Lock, Narrington, Northamptonshire—Imp. in apparatus for raising or elevating straw and crops on to stacks.
854. R. De Bary, Finsbury-square—Imp. in machinery for the manufacture of cigars. (A com.)
856. W. E. Gedge, 11, Wellington-street, Strand—Imp. in apparatus for extinguishing fire. (A com.)
858. J. H. Johnson, 47, Lincoln's inn-fields—Imp in threshing machines. (A com.)
860. G. H. Birkbeck, 34, Southampton-buildings, Chancery-lane—Imp. in producing imitation mosaics. (A com.)

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

847. F. Tolhausen, 17, Faubourg Montmartre, Paris—New or improved cigar-tubes or apparatus for holding and smoking cigars and cigarets. (A com.)—March, 1862.
893. J. P. Woodbury, Boston, U.S.—An imp. in arming war vessels.—31st March, 1862.
910. M. Henry, 84, Fleet-street—An improved furnace for treating iron ore. (A com.)—1st April, 1862.

PATENTS SEALED.

[*From Gazette, April 4th*, 1862.]

April 4th.

2505. J. C. Willsher.
2510. W. Simpson.
2514. R. W. Sievier.
2516. W. Smith.
2521. H. B. Coathupe and F. H. Waltham.
2531. C. W. Felt.
2533. L. Christoph, W. Hawksworth, & G. P. Harding.
2544. N. Stram.
2561. B. Taylor and C. Edkins.
2562. F. B. Houghton.
2573. F. B. Baker.
2574. T. Forster.
2584. W. Welch.
2605. H. Macmeikan.
2623. J. T. Smith.
2700. G. M. Gilbert.
2822. W. E. Newton.
2855. W. L. Balmain & J. Kean.
2877. E. Loomes.
3009. T. Ellis.
3182. W. Tate.
3202. G. T. Bousfield.
3225. F. Laurent and J. Castelaz.
36. G. T. Bousfield.
127. N. Thompson.
191 J. Alison.

[*From Gazette, April 8th*, 1862.]

April 8th.

2534. B. Browne.
2549. J. C. Ramsden.
2559. H. J. Distin.
2564. J. Flinn.
2619. H. Bloxham.
2624. E. Oldfield.
2680. B. J. La Mothe.
2703. O. Bayliss.
2743. B. Mitchell & W. Brunton.
2784. G. T. Bousfield.
2786. H. D. Bradt.
2841. W. E. Newton.
2907. B. D. Godfrey.
3041. W. E. Newton.
3191. J. Westwood.
3221. A. V. Newton.
217. J. Hunt.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[*From Gazette, April 4th*, 1862.]

March 31st.

832. M. Coupland.
845. D. B. White.
866. A. Chaplin.
1098. J. Childs.

[*From Gazette, April 8th*, 1862.]

April 2nd.

830. A. Paget.
846. E. Morewood.
889. J. H. Young.
1124. J. Scholfield and W. Cudworth.

April 3rd.

850. E. Fairburn.

April 4th.

853. G. F. Chantrell & E. Dutch.
862. W. Owen.
873. J. T. Pitman.
883. W. Henderson.
935. J. Luis.
957. W. E. Newton.

April 5th.

863. J. Rogers and E. J. Tweed.
881. W. Hooper.
933. J. Hughes, W. Williams, and G. Leyshon.
996. H. Rawson.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

[*From Gazette, April 8th*, 1862.]

April 1st.

736. W. Lund and W. E. Hipkins.

LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietor's Name.	Address.
4462	April 7.	A Fastening for Purses, Bags, Pocket-books, and other articles	Silber and Fleming...	56, Wood-street, E.C.
4463	,, 8.	Bayley's Improved Acoustic Cornet	John Bayley	57, New King's-road, Chelsea, S.W.
4464	,, ,,	Bayley's Improved Acoustics for Musical Instruments	John Bayley	57, New King's-road, Chelsea, S.W.